TI-31321

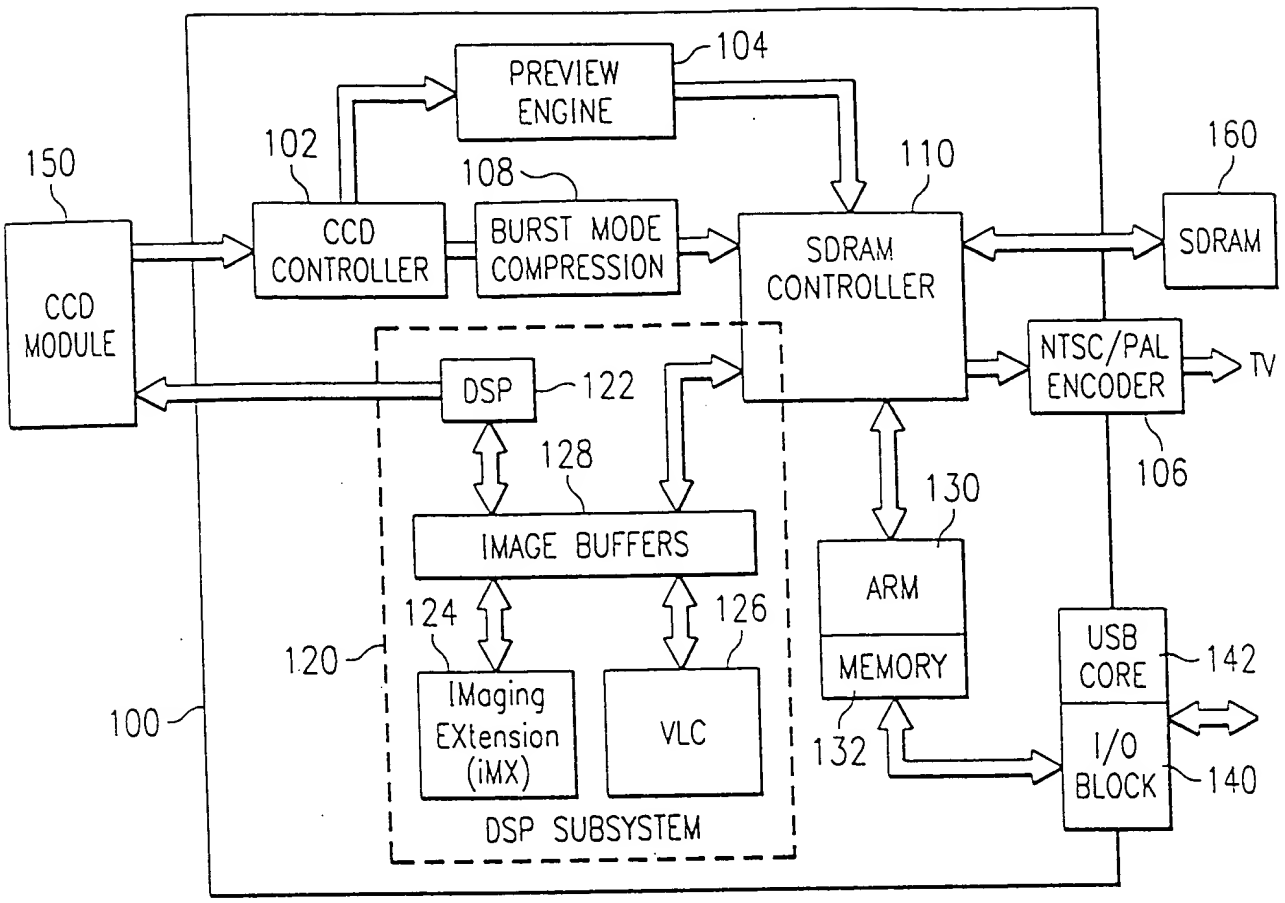


FIG. 1a

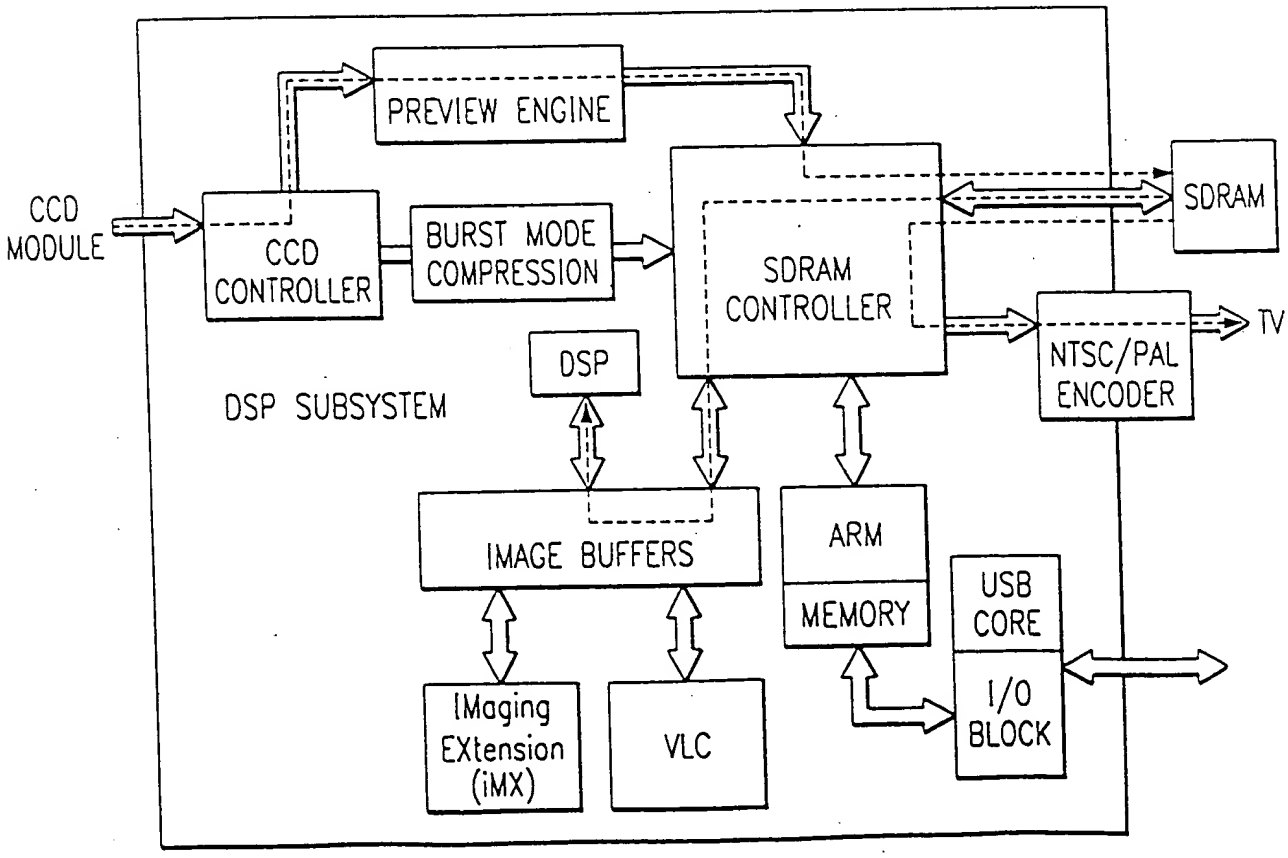
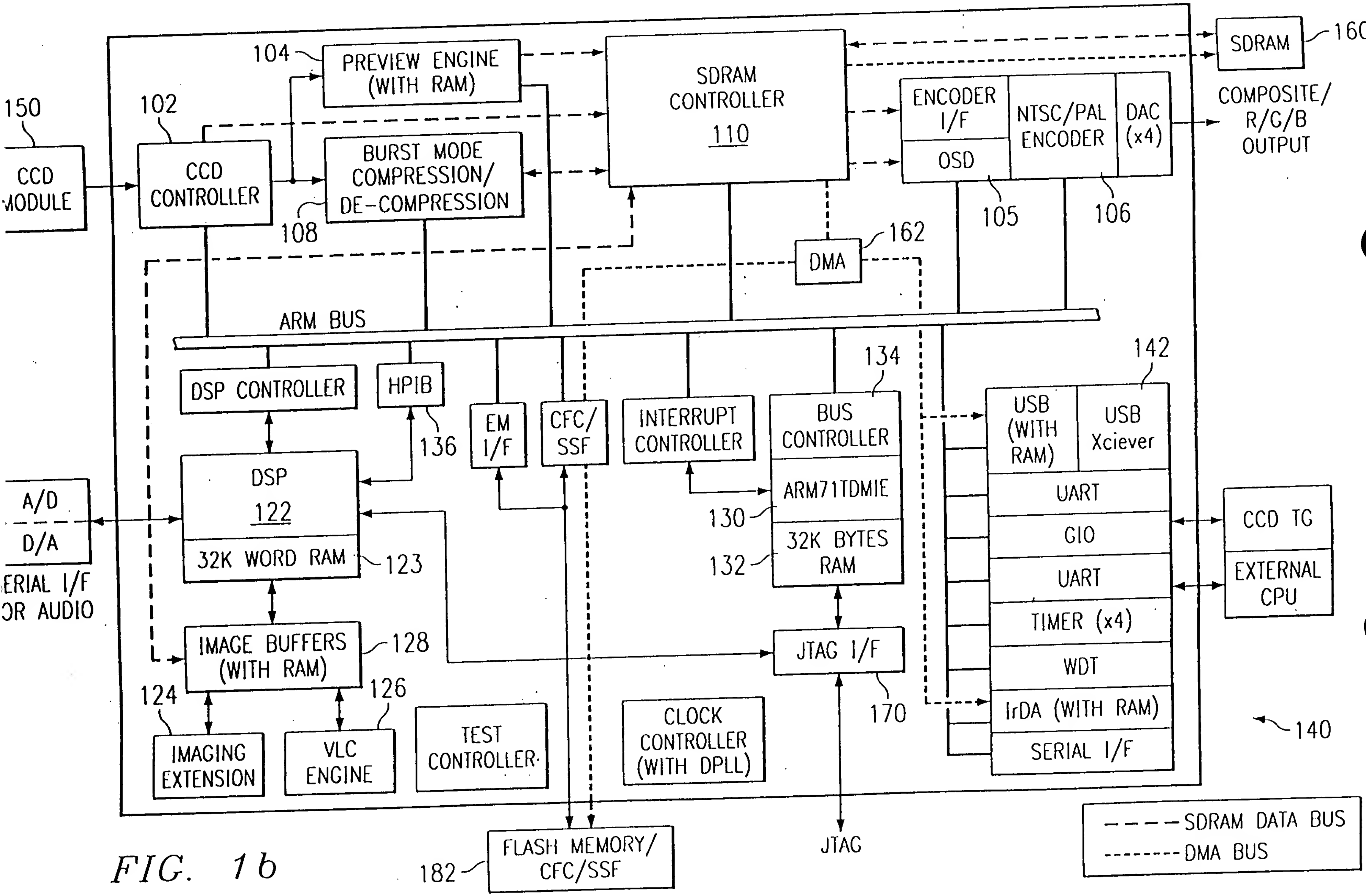


FIG. 2



150
CCD MODULE
102
CCD CONTROLLER
104
PREVIEW ENGINE (WITH RAM)
108
BURST MODE COMPRESSION/ DE-COMPRESSION
SDRAM CONTROLLER 110
SDRAM
160
ENCODER I/F
OSD
105
NTSC/PAL ENCODER
106
DAC (x4)
COMPOSITE/ R/G/B OUTPUT
DMA
162
ARM BUS
DSP CONTROLLER
HPIB
136
EM I/F
CFC/ SSF
INTERRUPT CONTROLLER
134
BUS CONTROLLER
ARM71TDMIE
130
32K BYTES RAM
132
142
USB (WITH RAM)
USB Xciever
UART
GIO
UART
TIMER (x4)
WDT
IrDA (WITH RAM)
SERIAL I/F
CCD TG
EXTERNAL CPU
A/D
D/A
SERIAL I/F FOR AUDIO
DSP 122
32K WORD RAM
123
IMAGE BUFFERS (WITH RAM)
128
124
IMAGING EXTENSION
126
VLC ENGINE
TEST CONTROLLER
CLOCK CONTROLLER (WITH DPLL)
JTAG I/F
170
JTAG
140
FLASH MEMORY/ CFC/SSF
182
SDRAM DATA BUS
DMA BUS

FIG. 1b

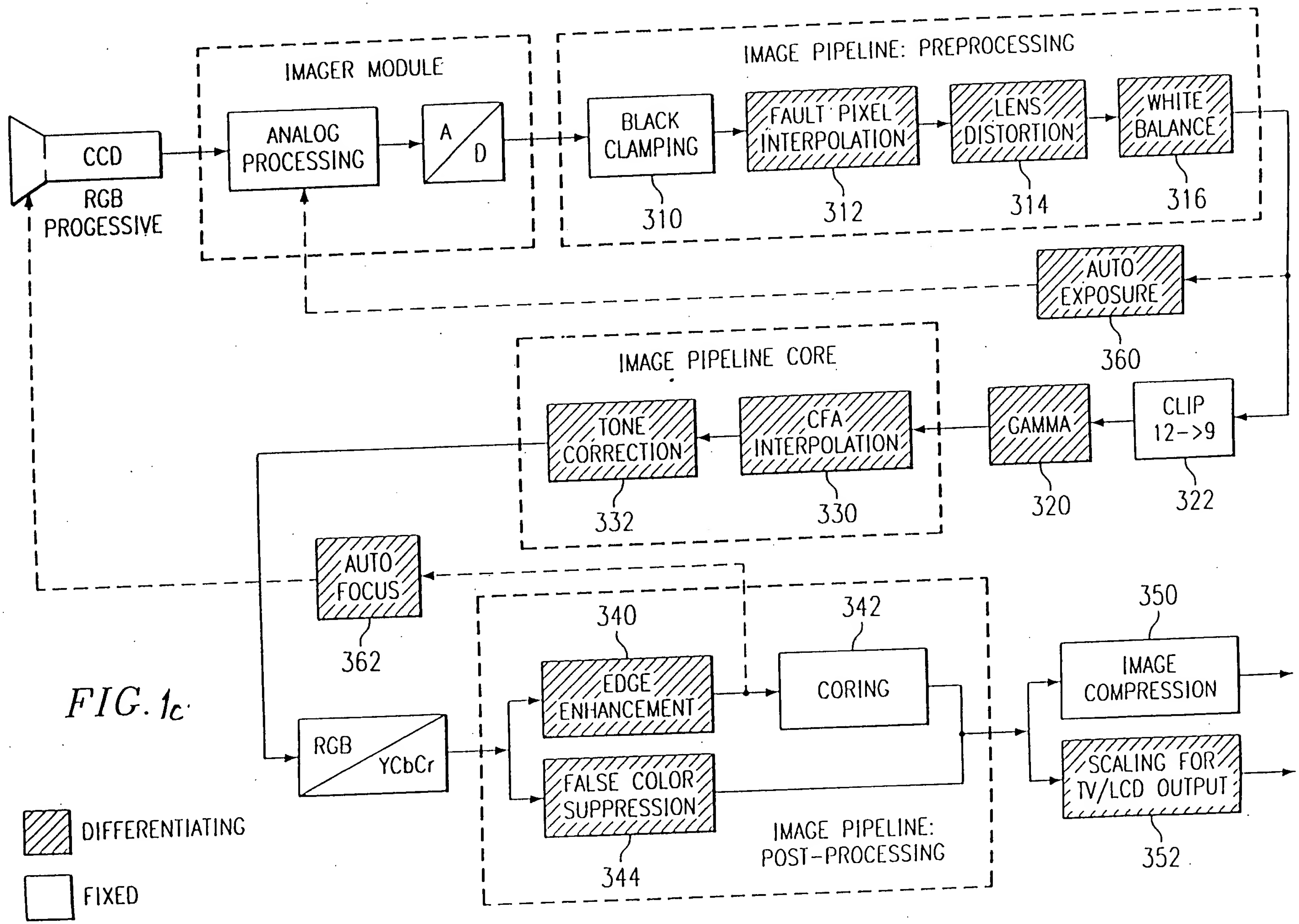

CCD
RGB PROGESSIVE
IMAGER MODULE
ANALOG PROCESSING
A
D
IMAGE PIPELINE: PREPROCESSING
BLACK CLAMPING
310
FAULT PIXEL INTERPOLATION
312
LENS DISTORTION
314
WHITE BALANCE
316
AUTO EXPOSURE
360
IMAGE PIPELINE CORE
TONE CORRECTION
332
CFA INTERPOLATION
330
GAMMA
320
CLIP 12->9
322
AUTO FOCUS
362
RGB
YCbCr
EDGE ENHANCEMENT
340
CORING
342
FALSE COLOR SUPPRESSION
344
IMAGE PIPELINE: POST-PROCESSING
IMAGE COMPRESSION
350
SCALING FOR TV/LCD OUTPUT
352
DIFFERENTIATING
FIXED

FIG. 1c

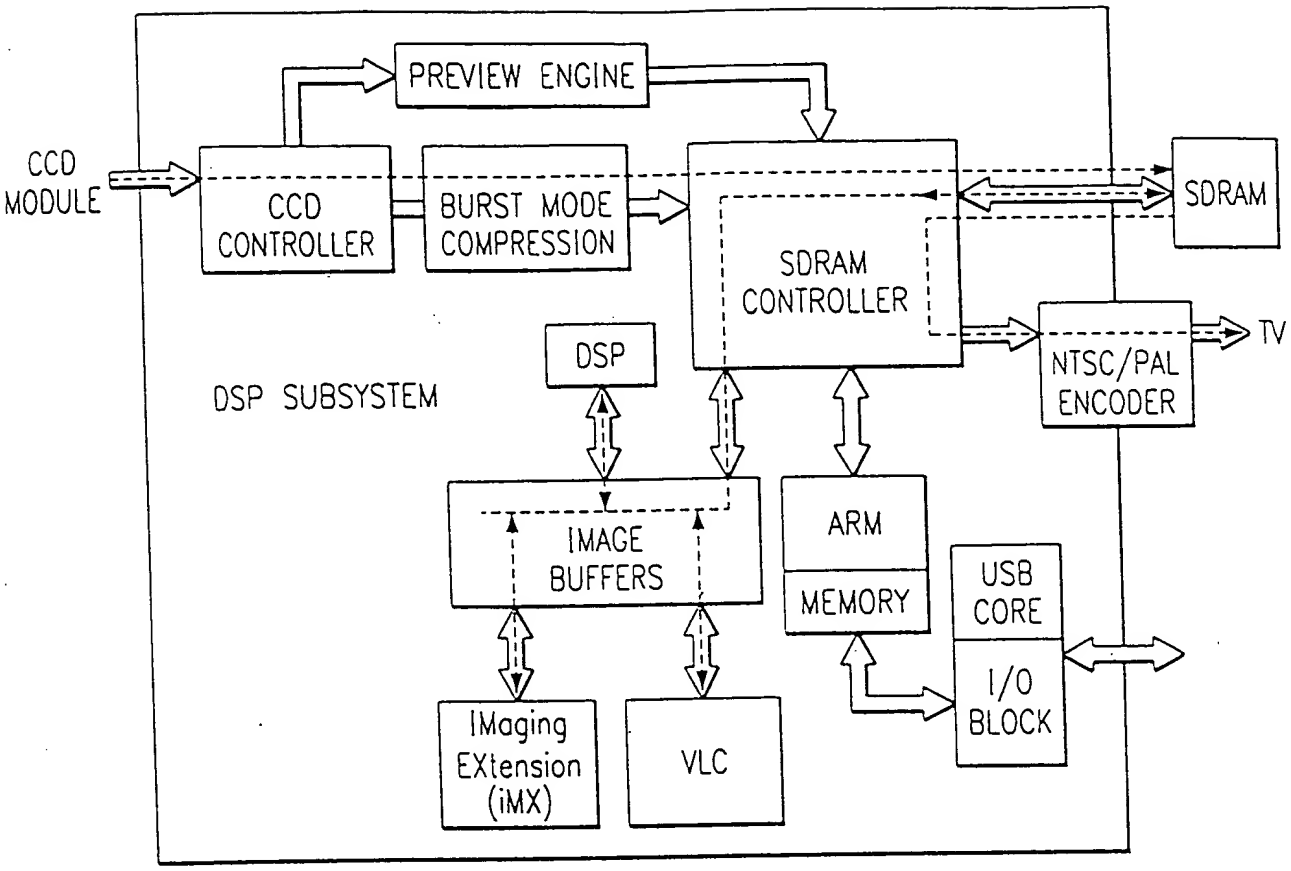

PREVIEW ENGINE
CCD MODULE
CCD CONTROLLER
BURST MODE COMPRESSION
SDRAM CONTROLLER
SDRAM
TV
NTSC/PAL ENCODER
DSP
DSP SUBSYSTEM
IMAGE BUFFERS
ARM
MEMORY
USB CORE
I/O BLOCK
IMaging EXtension (iMX)
VLC

FIG. 3a

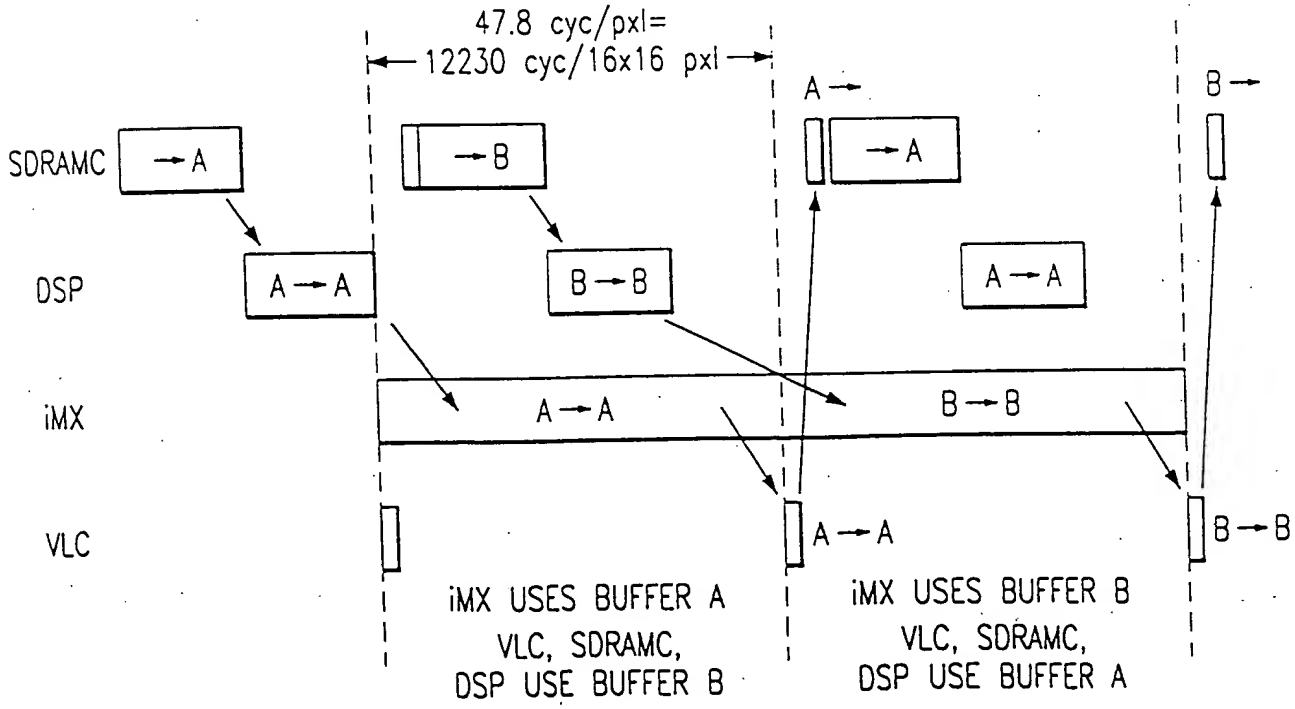

47.8 cyc/pxl=
12230 cyc/16x16 pxl
SDRAMC
DSP
iMX
VLC
A
B
A→A
B→B
iMX USES BUFFER A
VLC, SDRAMC,
DSP USE BUFFER B
iMX USES BUFFER B
VLC, SDRAMC,
DSP USE BUFFER A

FIG. 3b

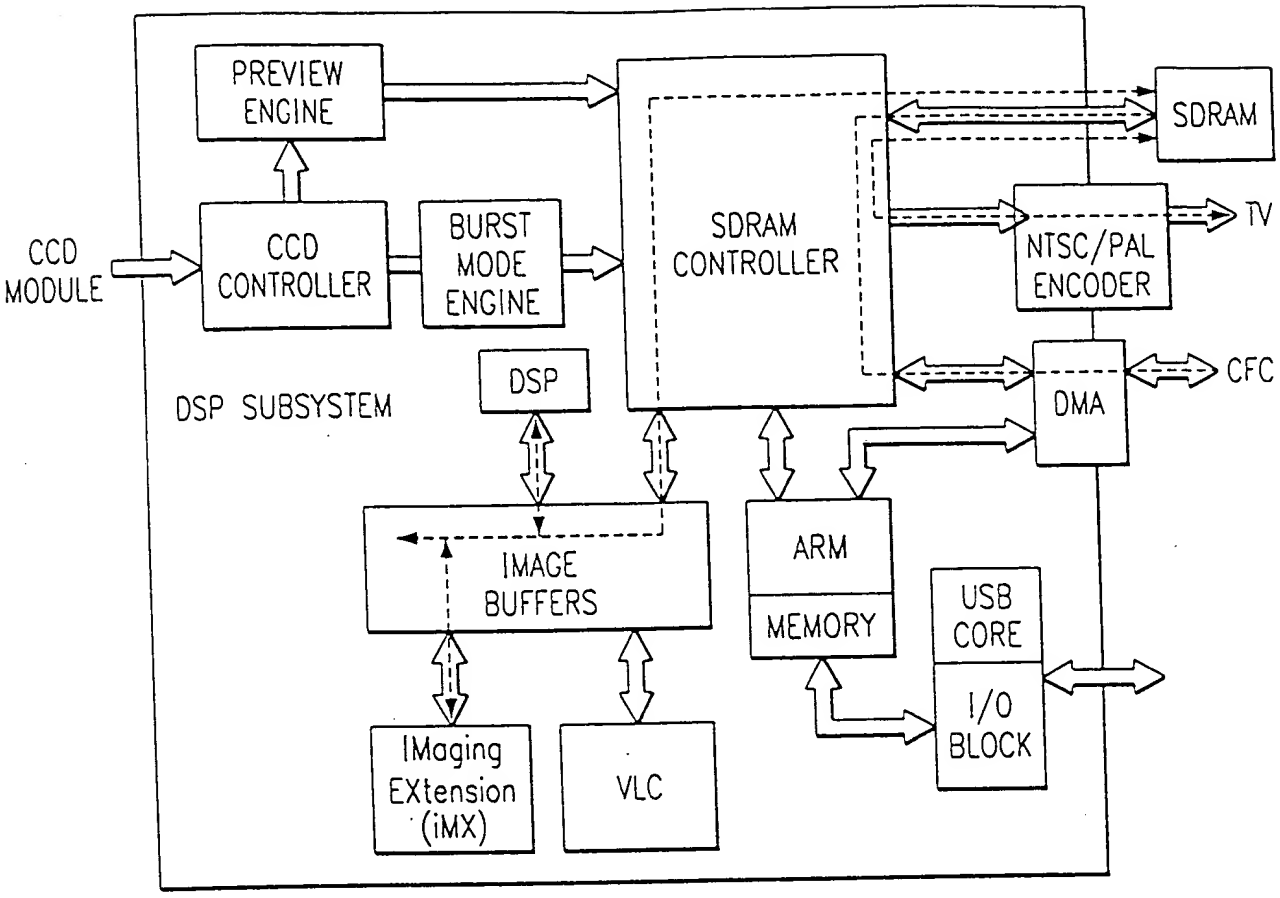

PREVIEW ENGINE
SDRAM
CCD MODULE
CCD CONTROLLER
BURST MODE ENGINE
SDRAM CONTROLLER
NTSC/PAL ENCODER
TV
DSP SUBSYSTEM
DSP
DMA
CFC
IMAGE BUFFERS
ARM
MEMORY
USB CORE
I/O BLOCK
IMaging EXtension (iMX)
VLC

FIG. 4

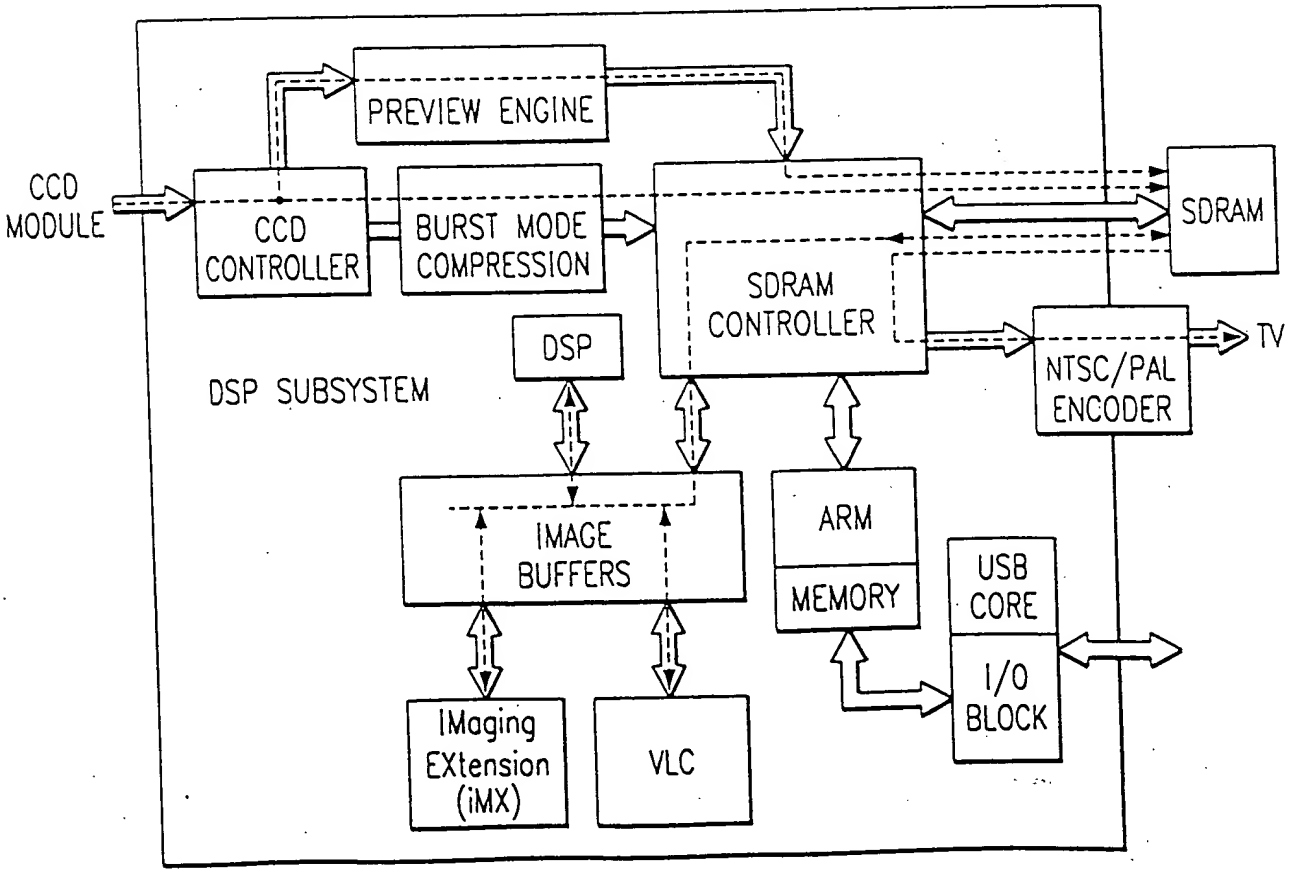

PREVIEW ENGINE
CCD MODULE
CCD CONTROLLER
BURST MODE COMPRESSION
SDRAM
SDRAM CONTROLLER
DSP
TV
NTSC/PAL ENCODER
DSP SUBSYSTEM
IMAGE BUFFERS
ARM
MEMORY
USB CORE
I/O BLOCK
IMaging EXtension (iMX)
VLC

FIG. 5

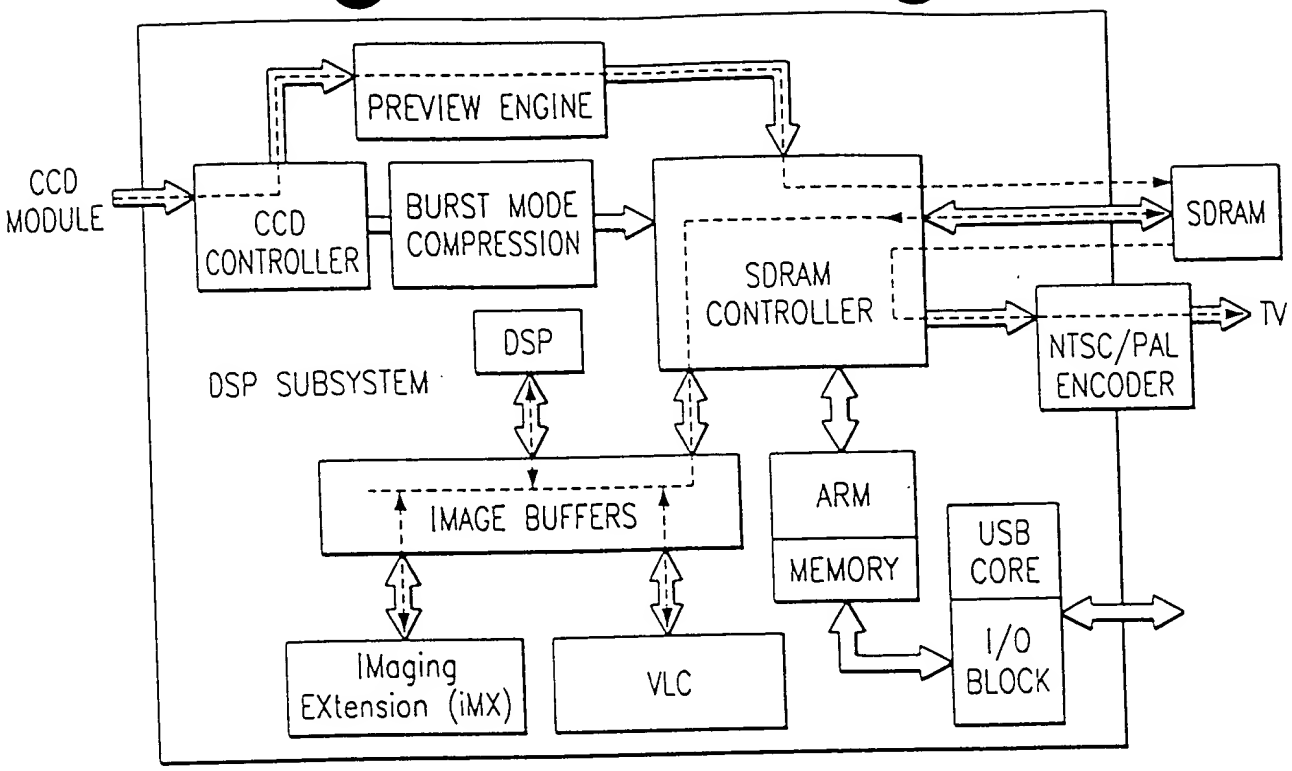


FIG. 6

R	G	R	G
G	B	G	B
R	G	R	G
G	B	G	B

FIG. 7a

Ye	Cy	Ye	Cy
G	Mg	G	Mg
Ye	Cy	Ye	Cy
G	Mg	G	Mg

FIG. 7b

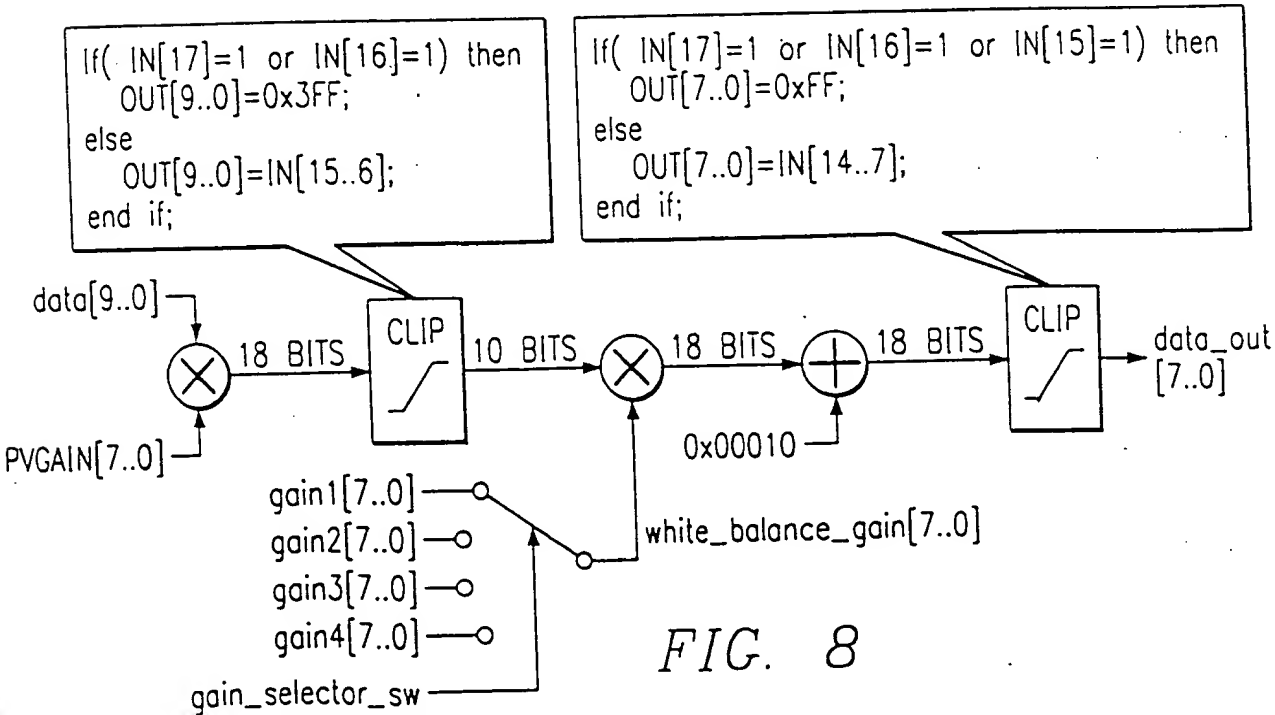


FIG. 8

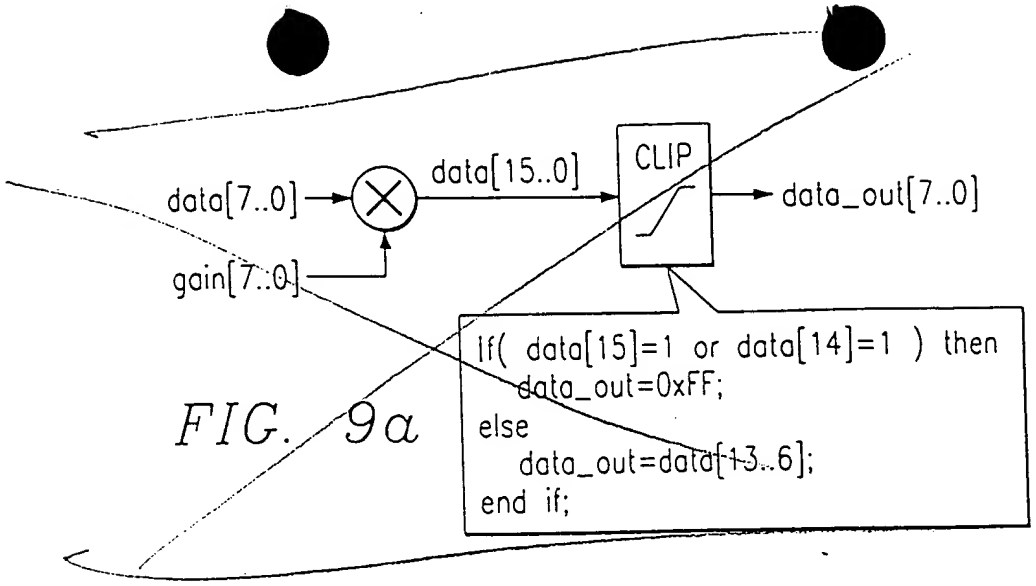


FIG. 9a

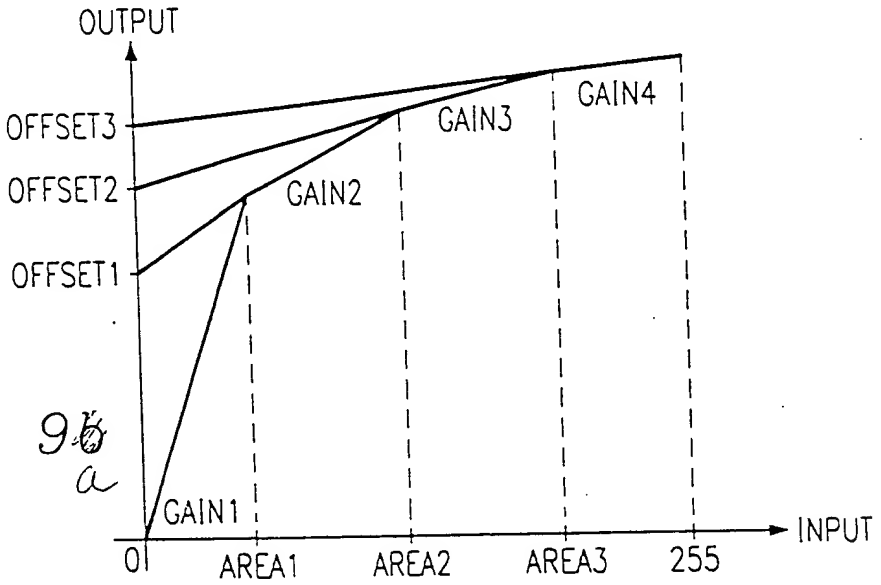


FIG. 9b

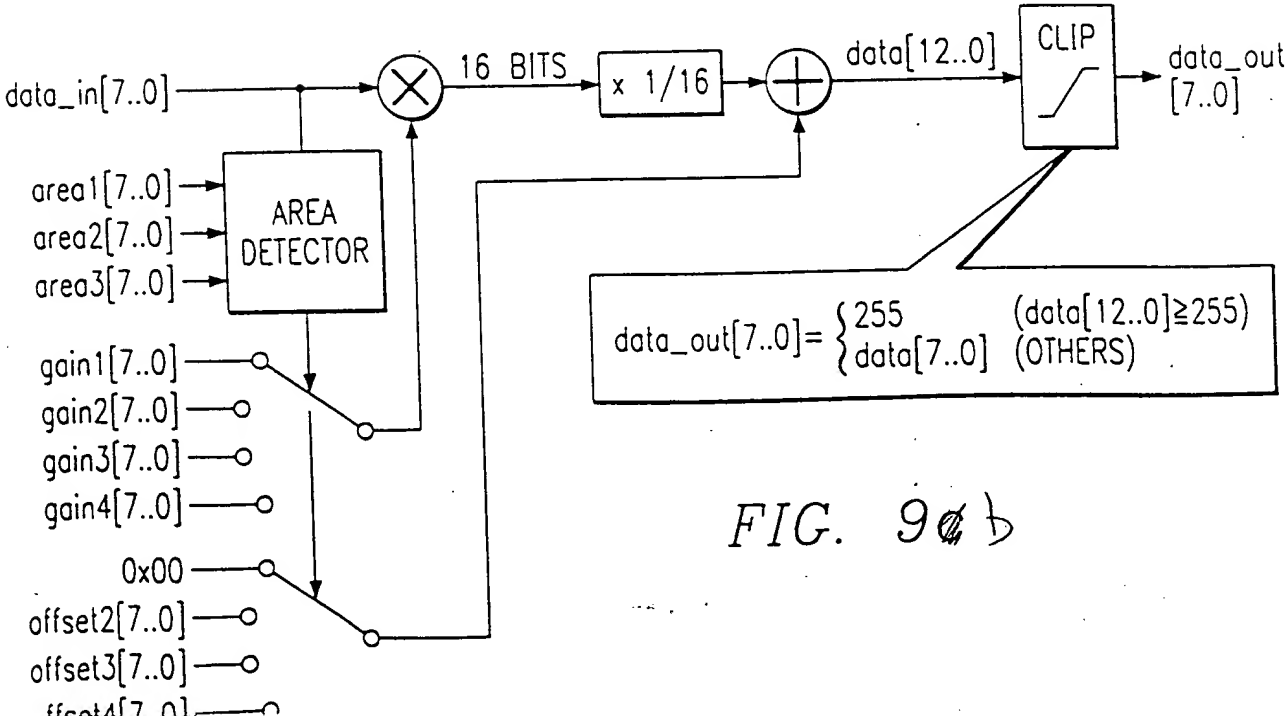


FIG. 9c

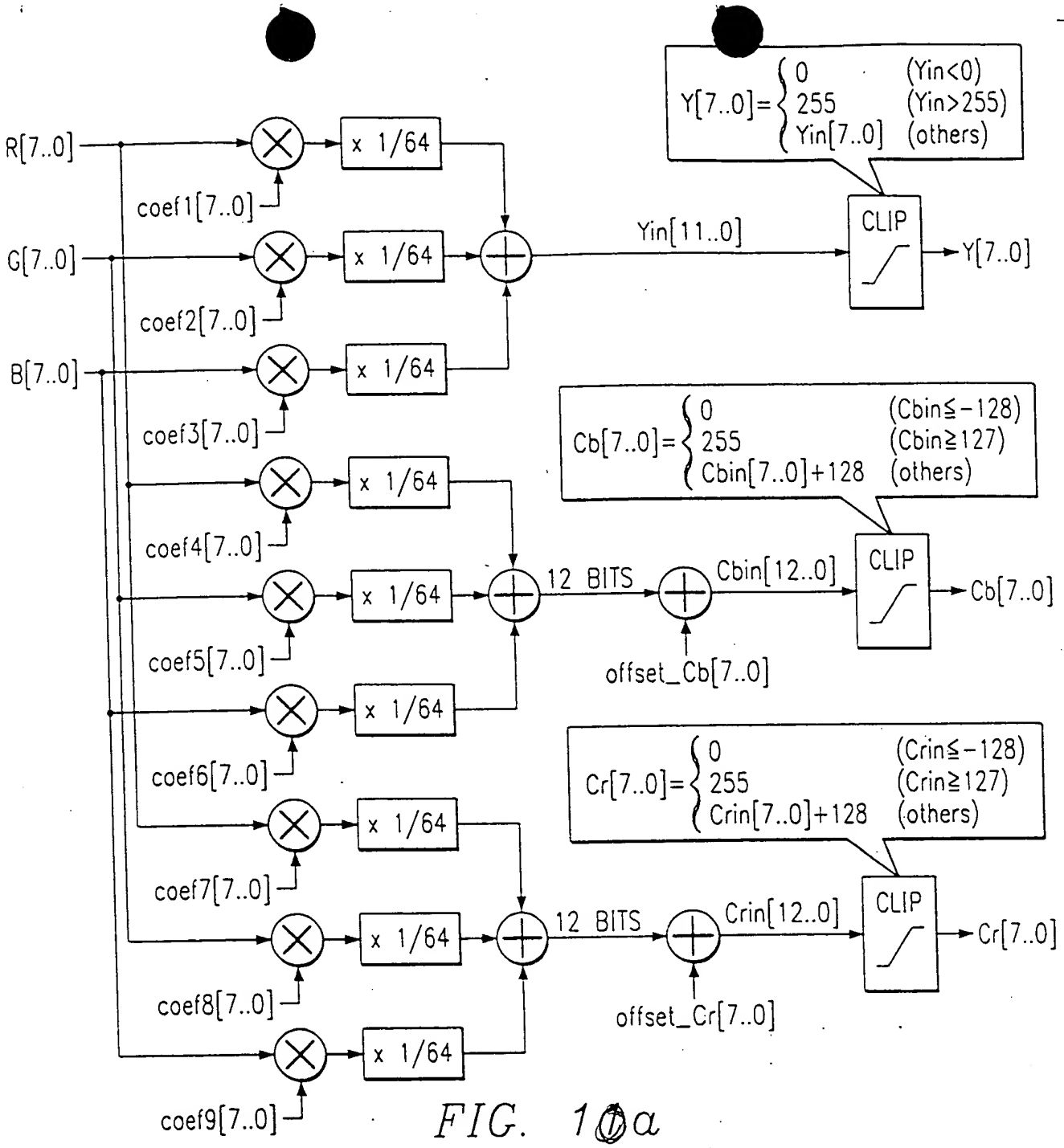


FIG. 10a

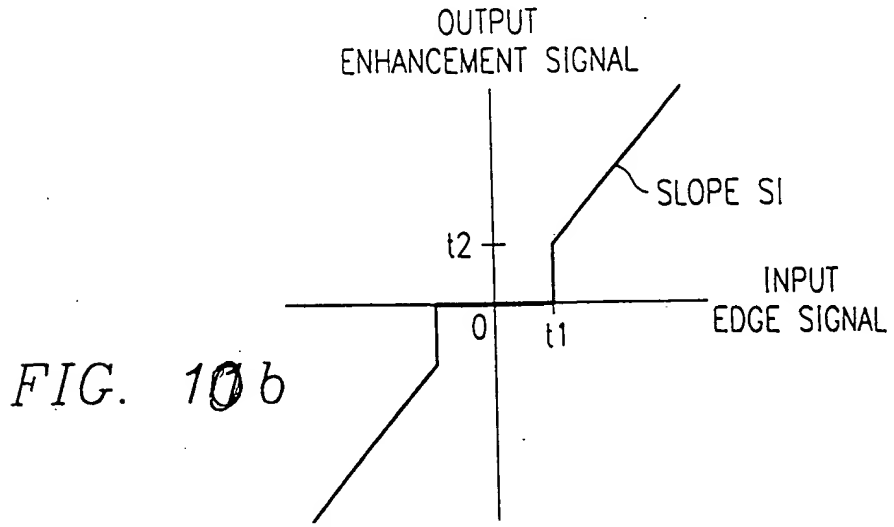


FIG. 10b

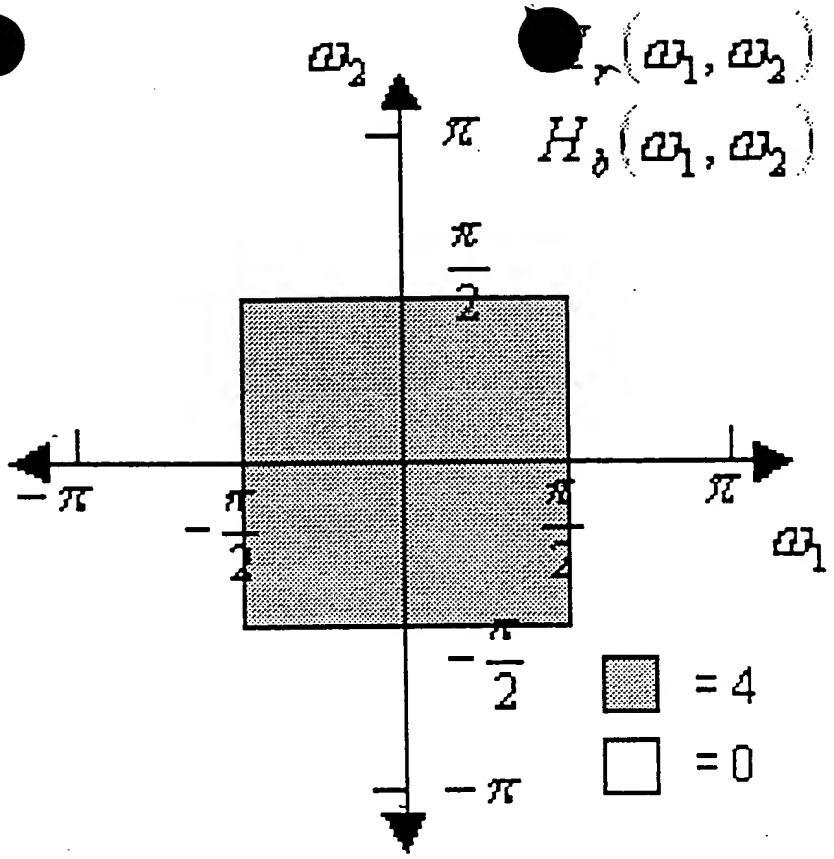


Fig. 11b

(a) Ideal red/blue interpolation filter.

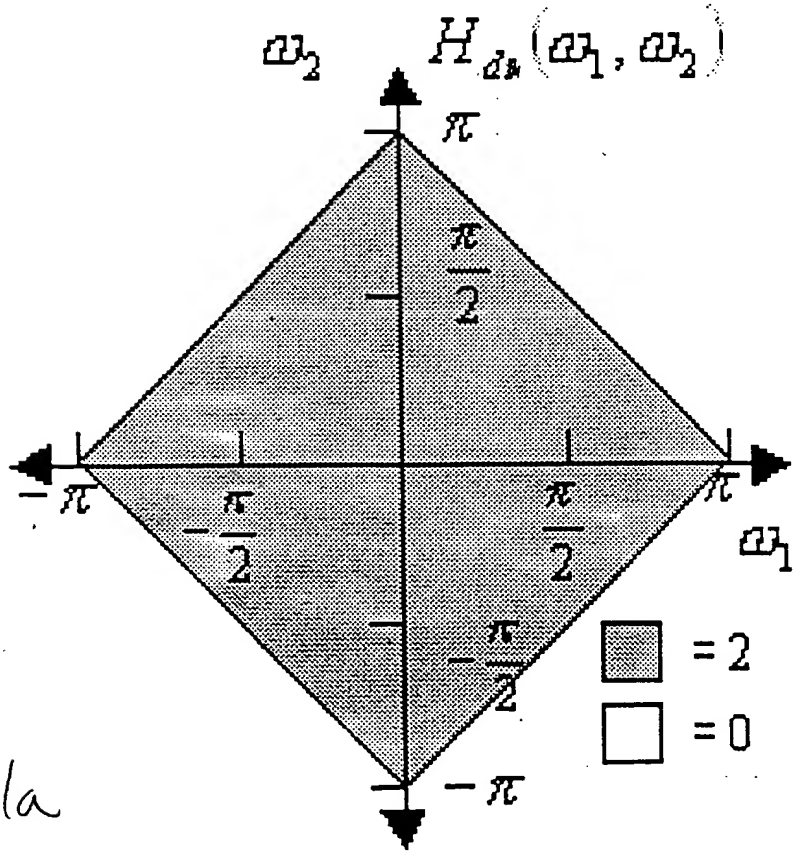


Fig 11a

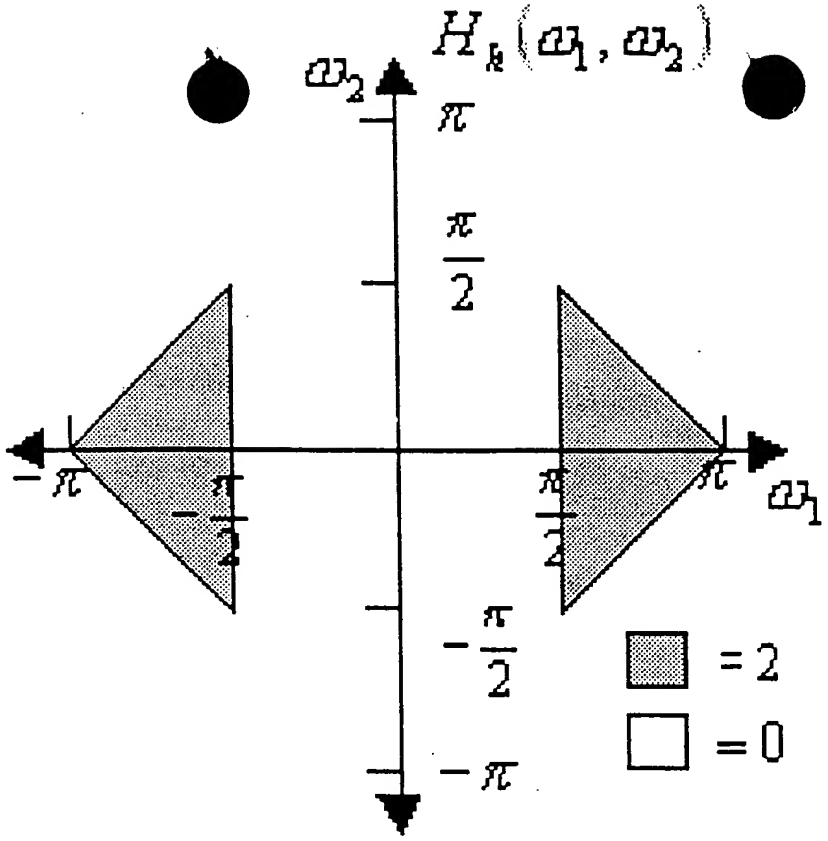


Fig. 11c

(a) Ideal horizontal high-pass filter.

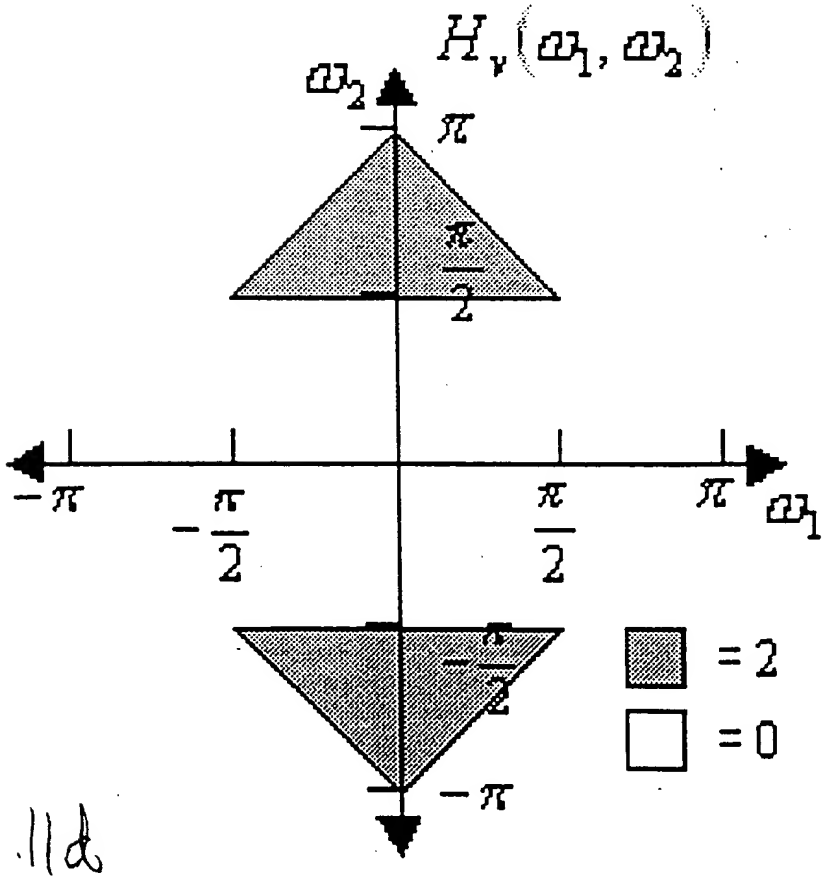


Fig. 11d